

1 16. (Newly presented) A lithium polymer secondary battery comprising:

2 a positive electrode;

3 a negative electrode:

4 a gel polymer electrolyte comprising polymer and an organic electrolyte
5 solution dissolving a lithium salt; and

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6 ceramic particles not relating to the charge and discharge reaction of the
7 battery in at least one of the positive electrode and the negative electrode;

8 wherein:

9 the content of the ceramic particles is 0.01 to 10 parts by weight in 100
10 parts by weight of active substance in the at least one electrode that comprises
11 ceramic particles;

12 the particle size of the ceramic particles is 10 microns or less; and

13 the gel polymer electrolyte does not comprise ceramic particles.

1 17. (Newly presented) The lithium polymer secondary battery of claim 16
2 in which the ceramic particles comprises at least one ceramic material selected
3 from the group consisting of Al_2O_3 , SiO_2 , ZrO_2 , MgO , and Na_2O .

1 18. (Newly presented) The lithium polymer secondary battery of claim
2 16 in which the ceramic material is Al_2O_3 .

1 19. (Newly presented) The lithium polymer secondary battery of claim 16
2 in which at least one of the positive electrode and the negative electrode comprises
3 a polymer electrolyte.

1 20. (Newly presented) The lithium polymer secondary battery of claim
2 19 in which the ceramic material is Al_2O_3 .

1 21. (Newly presented) The lithium polymer secondary battery of claim 20
2 in which the positive electrode comprises LiCoO_2 or V_6O_{13} .

1 22. (Newly presented) A non-aqueous lithium ion secondary battery
2 comprising:

3 a positive electrode comprising a lithium transition metal compound oxide;

4 a negative electrode comprising an active substance that occludes and
5 releases lithium;

6 ~~SUB C~~ ¹² a separator between the positive electrode and the negative electrode; and

7 a nonaqueous electrolyte solution dissolving a lithium salt;

8 wherein:

9 the negative electrode comprises ceramic particles not relating to the charge
10 and discharge reaction of the battery;

11 the content of the ceramic particles is 0.01 to 10 parts by weight in 100
12 parts by weight of the active substance in the negative electrode; and

13 the particle size of the ceramic particles is 10 microns or less.

1 23. (Newly presented) The battery of claim 22 in which the ceramic
2 particles comprises at least one ceramic material selected from the group
3 consisting of Al_2O_3 , SiO_2 , ZrO_2 , MgO , and Na_2O .

1 24. (Newly presented) The battery of claim 23 in which the ceramic
2 material is Al_2O_3 .

SUB 3/17
1 25. (Newly presented) The battery of claim 24 in which the lithium
2 transition metal compound oxide is LiCoO_2 .

1 26. (Newly presented) A lithium polymer secondary battery comprising:

2 a positive electrode;

3 a negative electrode;

4 a gel polymer electrolyte comprising polymer and an organic electrolyte
5 solution dissolving a lithium salt; and

6 wherein:

7 the positive electrode, the negative electrode, and the gel polymer
8 electrolyte each comprise ceramic particles not relating to the charge and
9 discharge reaction of the battery; and

10 the particle size of the ceramic particles is 10 microns or less.

1 27. (Newly presented) The lithium polymer secondary battery of claim 26
2 in which the content of the ceramic particles is 0.01 to 10 parts by weight in 100
3 parts by weight of the active substance in the electrodes.

1 28. (Newly presented) The lithium polymer secondary battery of claim 27
2 in which the ceramic particles comprises at least one ceramic material selected
3 from the group consisting of Al_2O_3 , SiO_2 , ZrO_2 , MgO , and Na_2O .